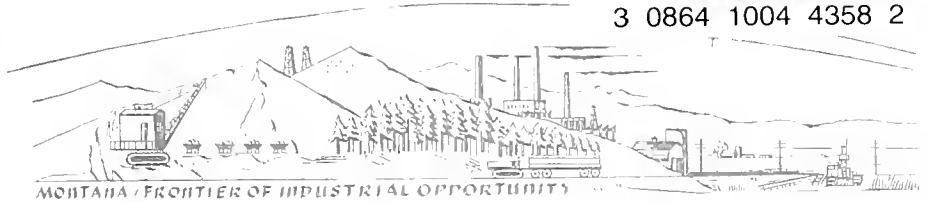


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## FRINGE AREAS ECONOMIC LOSS TO GROWING CITY

Following is a guest editorial by Earle Knight, Mayor of Billings, which appeared in the "Great Falls Tribune" on August 2, 1956. It is here reprinted with Mayor Knight's permission because of its bearing on community development. Pursuant to the problem of city financing raised in this article, the State Planning Board is continuing its research on legislation to enable cities and counties to form joint planning commissions. With more effective subdivision and zoning control, many of the problems Mayor Knight mentions can be alleviated.



HON. EARLE KNIGHT,  
Mayor of Billings.

A growing city is a healthy city both economically and geographically.

This is a fact proven by all of the growing cities of Montana that are blessed by a growing population that is able to provide jobs and contribute to the financial structure of their municipal government.

However, these points are true if the growing population locates itself within the boundaries of the city proper. The problem of the city in having to provide the necessary conveniences, safety precautions and recreational facilities for persons residing beyond the city limits creates a definite economic loss for your city government.

The increase of traffic, both pedestrian and automobile, means the spending of city taxpayers' dollars for safety paint, new signs, increased police force, parking lots, restricted parking, crosswalks and hundreds of

## Lignite--Montana's Resource of Future-- To Be Used as Power Source in Sidney

A signal event in Montana's economic development occurred June 6 with groundbreaking ceremonies for Montana-Dakota Utilities steam-generating plant at Sidney.

For this plant represents the first large-scale use of Montana's huge lignite coal deposits in electric power development. As a fuel source, a chemical raw material, and a source of certain strategic minerals, this vast resource portends new economic activity for the Eastern third of the State. Montana has the second largest coal reserves in the country—over 220 billion short tons, covering about 35 per cent of the State's surface area.

The development of the idea behind this plant is interesting and important. In 1952 a group of businessmen, based in Minneapolis but interested in the development of the large trade area which includes the Dakotas and Eastern Montana, decided that a new and comprehensive study

minor safety precautions, all costing money as well as extra repair of suburban streets leading to the areas in which new homes are being constructed beyond the city limits. The increased loads of construction trucks and increased traffic on these streets costs your government thousands of extra tax dollars each year.

The additional cost of providing swimming pools and parks for the persons not assessed the minor taxes allowed by law for these recreational facilities also tends to bankrupt the very institution from which these people derive their livelihood.

There are many reasons for persons residing in fringe areas, just beyond the city limits, to desire to reside within the corporate boundaries. The most important of these is civic pride in their community, by being a part thereof. Actually many home owners are now paying in dollars and cents a penalty for living beyond the city limits of their city. These penalties are in the form of extra premiums to fire insurance companies, sewer charges, higher garbage rates for less service, higher interest rates for special improvement districts and in many cases, extra charges for fire protection.

Most cities have encouraged the annexation of these areas and invited all of them to become part of their official family. Only then can the municipality become an economically sound city, serving its citizens as such.

of the area's resources might properly be undertaken. The discovery of oil and gas in commercial quantities in the Williston Basin, the greatly augmented water supply created by new dams in the Missouri River, the increased price of competing fuels such as bituminous coal and natural gas, and the limited amount of additional cheap hydroelectric power available in the United States—all these were factors contributing to making this a timely study. As a result, sixteen firms formed the Resources Research Committee, and subscribed \$130,000 to finance an economic and engineering study of the area termed the "Upper Midwest." Among these firms were the Great Northern and Northern Pacific Railways, and Montana-Dakota Utilities. Lignite was the major resource in which the sponsors were interested. They were convinced that the huge deposits of lignite in Montana and North Dakota will one day be one of the most important fuel reserves in the country, an industrial raw material of the first magnitude.

This committee engaged an industrial engineering and consulting firm to conduct the study. A result was the "Summary of Industrial Opportunities of North Dakota and Adjoining Areas," published in January of 1955, which concluded, "when lignite is burned near the mine, power can be generated at costs as low as, or lower than, those for thermal power in any other section of the country." The study also recommended as feasible associated industries, aluminum smelters, iron-ore smelters, ammonia plants, and chloralkali plants based on salt deposits. Montana-Dakota's steam plant is one of the first results of this study.

The company plans to strip mine its own lignite from eastern Montana, according to Robert Naylor, Public Relations Director. Three pulverizers at the plant will dry and grind the lignite to a fine dust the consistency of talcum powder. These pulverizers will deliver 45 tons of prepared lignite per hour to the twelve burners, which will be located in each of the four corners of the furnace and set at an angle to produce a whirlpool motion to the furnace gases. Regular lump coal cannot be used because

(Continued on Page 4)

# Montana Bureau of Mines Serves State's Organizations

*The following article is another of the series INDUSTRIAL HORIZONS is publishing on the services the state's various research organizations, both public and private, can contribute to our economic advancement. The Montana Bureau of Mines and Geology is associated with the Montana School of Mines in Butte. Its Director, Dr. J. R. Van Pelt, President of the School of Mines, has resigned to accept the Presidency of Michigan College of Mining and Technology. Professor Walter S. March is Associate Director and U. M. Sahinen is Information Director. This article was written by the Bureau staff.*

The Montana Bureau of Mines and Geology is a public service agency of the State of Montana. It was created to aid in the development of the mineral resources of the State. Some of the ways in which the Bureau gives this aid are described below.

In 1951 there was a great deal of interest in the tungsten deposits of Montana. Tungsten was known to occur within the state, but little, if anything, was known of the technology or economics of tungsten production in Montana. A hearing before the Committee on Interior and Insular Affairs of the United States Senate, 82nd Congress, Second Session, on Defense Minerals Policy, was scheduled for December 12, 1951, at Butte, Montana. The Committee included Senator James E. Murray (presiding) and Senator Zales N. Ecton. Tungsten, a strategic metal, was to be considered at this hearing. Two members of the Bureau staff, Perry F. Roys, economist, and Donald W. McGlashan, mineral dressing engineer, undertook the preparation of a comprehensive report on the "Tungsten Situation in Montana." The report was made before the Senate Committee and later published in its entirety in the records of the hearing. Thus it was partly instrumental in establishment of the Federal tungsten purchasing program. It was also issued as Montana Bureau of Mines and Geology "Miscellaneous Contribution No. 12," and has been in great demand by those interested in tungsten development in Montana.

The ground-water resources of the nation are being depleted. In many areas, especially the Southwestern states, the problem has become acute. Montana has not yet suffered in this respect, nor have the ground-water resources of the State been fully developed. Much work remains to be done in the study of ground-water availability for domestic and stock use, and for irrigation. The Bureau has always considered ground-water studies of the greatest importance. Many specific areas have been studied, and in addition, requests for information from ranchers and well-drillers on proposed wells are given top priority in correspondence. However, in order to increase the amount of ground-water information obtained per dollar, the Bureau has entered into a cooperative agreement with the Ground-Water Branch of the U. S. Geological Survey. Under this agreement cooperative ground-water studies are made principally by Survey personnel, but the Bureau

bears one-half the cost and provides technical help when it is advantageous to do so. The advantages to Montana from this agreement are that the Survey matches Bureau funds at least dollar for dollar and the Bureau gains the services of the well-trained and experienced personnel of the Federal Ground-Water Branch. The Bureau contributed \$31,000 for the present biennium for ground-water studies in Ravalli and Musselshell counties, and expects to spend \$56,000 for the next biennium on further cooperative projects with the Federal Survey, if the necessary money is appropriated by the State Legislature.

Cooperation with other agencies and organizations is also undertaken. The Great Falls Chamber of Commerce, early this year, requested information on the possibilities of a lightweight concrete aggregate industry in the Great Falls area. The Bureau made a study of the available literature on the subject and issued a preliminary report. Negotiations are underway to extend the project to a field study. For this project, the Bureau would provide the personnel and pay their salary; the Chamber of Commerce would reimburse the Bureau for field expenses only. If the study were extended into a laboratory project, Bureau laboratory facilities would be used insofar as possible, but any special equipment or expense would have to be underwritten by the Chamber of Commerce. Such a study may result in the establishment of a new industry utilizing Montana raw materials.

The major geologic structural traps for oil and gas in Montana have been pretty well deciphered. However, a great deal of the oil and gas in Montana occurs in stratigraphic traps which are not apparent from structural studies. Stratigraphic traps occur where oil- and gas-bearing horizons become impervious through lensing, or decrease in permeability, or are sealed off by unconformities. These traps can be detected only by careful stratigraphic studies, and such studies are possible only when careful stratigraphic records are kept of test wells drilled for oil or gas. The Montana Bureau of Mines and Geology Petroleum Field Station at Billings is a storehouse for such records. Here cores and drill cuttings are stored, and space is made available for their study by petroleum geologists.

These are but four ways in which

the Bureau serves the public—there are many others. In general, it conducts field investigations of Montana geology, mineral deposits, and ground-water; and it conducts research in mineral beneficiation, extractive metallurgy, and economic problems connected with mineral deposits. Inquiries on any phase of the mineral industry in Montana are given careful consideration, and innumerable mineral and rock identifications are made free of charge for the citizens of Montana.

The Bureau receives all U. S. Government publications relating to the mineral industry and the publications of most, if not all, sister State bureaus or departments affiliated with the mineral industry. This large technical collection is deposited in the Montana School of Mines library and is open to the mineral-minded public.

The museum at the Montana School of Mines is under the supervision of the Bureau and contains a vast collection of minerals from all over the world; and of course, Montana minerals occupy a prominent place in the collection. This highly educational display is used freely by miners and prospectors. Conducted tours can be arranged on application by responsible civic groups.

## MINES BUREAU AIDS GREAT FALLS INDUSTRY

The Montana Bureau of Mines and Geology article on this page points up one of the State research agencies which can cooperate with local organizations to help develop our economy. These services can be illustrated well by the Great Falls project mentioned in the article.

September 6, twenty builders, wholesalers and manufacturers met at the invitation of the Great Falls Chamber of Commerce to hear Mr. March and Mr. Sahinen further explain the report. Later, the Board of Directors of the Chamber voted to enter into an agreement to cooperatively finance further survey by Bureau personnel.

In the case of the Great Falls aggregate question, it was estimated that only a day or so would be required to locate the shale and clay deposits, which have been reported just north of Great Falls. Samples would then have to be sent to a rotary kiln (several exist in neighboring states) to test the bloating or expanding quality of the deposits. Tests to determine strength, moisture content, and flammability can be conducted in the Bureau laboratories. Mr. Sahinen estimated that a week should be sufficient to definitely locate the scoria deposits, reported to have been found in the Highwood Mountains. No further tests would be required with scoria.

If the investigations are successful, several Great Falls firms have indicated a desire to expand their operations using the locally-available lightweight aggregates.

## Developments in Forest Industries Show Industrial Progress

Further evidence that Montana is entering a new stage in industrial development is shown by the expansion plans of two Western Montana companies.

Plum Creek Lumber Company, Columbia Falls sawmill operator, is constructing a new wooden box plant to serve Eastern markets. And Montana Hardboard Company of Missoula, which is currently shipping wood chips to an Idaho pulp mill, is planning to make hardboard. Both companies now merely process wood, and ship the semi-finished product to other areas for manufacture; hereafter, they will also manufacture a definite finished product. While their operations will be on a relatively small scale, they are a start, and we can be optimistic about further such developments.

Plum Creek, according to an article in the summer pictorial edition (July 13) of the "Hungry Horse News," started a mill and planer in Columbia Falls in 1945, and now employs 160 men. L. O. Rude, General Manager, hopes the new box factory will be in operation this winter, and estimates it will mean at least fifty new jobs in the Flathead area. The new operation will utilize edging and planing mill trims which now are burned as scrap, along with cottonwood lumber.

Montana Hardboard, west of Missoula, employs five men in a chipping operation. Projected plans are to expand into hardboard, which will be manufactured by a semi-dry process under license from the Plywood Research Foundation. The operation will produce 24,000 square foot of board per day, and employ 25 men. Gordon Lynch, company representative, explains that the current shortage of wallboard has produced an unlimited opportunity for a Montana operation, in which inexpensive raw material in the form of sawmill residues is the prime factor in lowering costs. He reports that the company already has requests for information on file from all over the world, and plans first production in 1958. An operation of this sort could also stimulate auxiliary activities, such as door manufacture, mass production of kitchen cabinets, and furniture manufacture.

Montana Hardboard has been chipping since February, and in July shipped 49 carloads 400 miles to Idaho. Douglas Hansen of Missoula is President, and the company is capitalized to do business in Montana at \$915,000.

Such developments indicate new areas of economic activity for much of Montana, for our forests are a state-wide resource. Western Montana, the White Sulphur area, forests in Southern Montana, and the Ponderosa pine stands in Eastern Montana, may all benefit.

## HHFA Aid for Community Improvements Available

Improvement of physical community facilities is an important factor in stimulation of new economic activity.

What firm wants to locate in a community with inadequate schools, where the streets are unplanned and hinder traffic rather than move it, where the water intake is just downstream a few miles from another community that drops raw sewage into the river? And the needs for community improvement will be intensified with the growth most Montana cities will experience in the next generation. Certain Federal agencies are concerned with alleviating the financial difficulties communities have in providing such necessary facilities. Of these, the Housing and Home Finance Agency is of special interest.

For instance, HHFA will pay thirty per cent of the costs involved in planning, designing, engineering, constructing or remodeling sewage treatment plants (or \$250,000, whichever is smaller).

Under Public Law 660, which the President signed on July 9, fifty million dollars for fiscal 1957 has been appropriated for this program. Montana's share will be \$503,650, according to C. W. Brinck, Director of the Division of Environmental Sanitation, State Board of Health. Applications for aid under this program will be available from the Board of Health around the end of October. After the Board has certified that a community's project meets State standards, and that it fits in with the integrated plan the Board has formulated for Montana's stream protection, the application will be forwarded to HHFA. If this agency approves the project, a priority number is assigned, and a contract signed between HHFA and the applying city.

All of Montana's grant must be spent before July of next year, emphasizes Brinck. None will be carried over, so it is to each community's interest to inquire as soon as possible. He also stressed that only the Board of Health initially processes applications for pollution control aid under this Act. All requests should be sent to him.

Under another program of the HHFA, interest-free loans for planning public improvements can be obtained. According to L. R. Durkee, Area Representative of the HHFA, "So often the provisions for sewers, streets, paving, water or other utilities are all that stand between a community and the industry it so much needs. If plans were available, the local body could arrange the financing for the construction. But they do not know how much, what the cost, or what information they need for the bond issue or other financing. This Advances for Public Works Planning fits right in there, as it provides the funds now, and the advance is repaid to

the Government, without interest charge, when construction is started." Normally, a public agency may not spend local funds for planning a project until the funds required for its construction have been fully authorized by the local governing body, or through a bond issue. It is estimated that, over the country, community facilities lag 25 per cent behind current requirements. This gap between planning and actual construction may be bridged with Government help.

Under this program, Dillon recently received an advance of five thousand dollars for preliminary planning on street improvements, including engineering field surveys, investigations of construction materials and soil conditions, and an estimate of costs. Other Montana communities recently granted planning advances, according to Alfred F. Klingler, Executive Director of the Montana Municipal League, include Flaxville, which received two thousand dollars for planning a new water system, and Bozeman, 57 thousand dollars for engineering studies of extension and improvements to its water system. In the case of Bozeman, the sale of \$1,500,000 in bonds approved by voters last May is contingent upon completion of detailed planning, for which the HHFA loan will be used. The loan will be repaid from money obtained in the bond sale.

HHFA can help our cities in several other ways. Loans for actual construction of improvements, aside from their design, can be made, but interest rates are pegged above those usually obtainable from private loan institutions. Urban renewal programs, of which slum clearance and public improvements are important aspects, are also eligible for Federal aid. Public housing and loans for construction of certain needed public buildings also benefit local communities. A special program concerns financing of college housing.

Information about planning assistance for these specific public improvements may be obtained directly from Mr. Durkee, 450 Federal Office Building, Seattle 4, Washington. It is to be emphasized that these programs of the HHFA are separate from the Urban Planning Program which the State Planning Board administers for cities under 25,000 population, and which concerns general master plans for a city's growth. If a community is actually contemplating applying for aid under any program of the HHFA, contact should be made with Mr. Durkee's office.

These programs for pollution abatement and public improvements show that help can be had. But local initiative is the keystone of all of them. There's no reason for inaction. It's up to the leaders of each community to inquire. And it's up to each community to take advantage of these programs.

## TAX LAW DECLARED UNCONSTITUTIONAL

As newspapers reported, the Montana Supreme Court on September 19, 1956, declared unconstitutional the controversial "tax incentive" law passed by the Legislature in 1951. This law provided that, "industrial property . . . for a period of three years after such property is first assessed," should be taxed at seven per cent of its true and full value, while another section of the tax classification law put manufacturing property in a thirty per cent tax classification. The Montana Constitution declares (Art. XII, Sec. 11) that taxes "shall be uniform upon the class of subjects within the territorial limits of the authority levying the tax." Therefore, the 1951 law was declared discriminatory to existing industries.

It seems to be the consensus among most industries and most states that a system of general tax incentives is not the most efficient manner in which to promote economic advancement. Not only must existing industry be nurtured and expanded, but business generally desires to pay its share of taxes. While the stability and equality of the tax structure is an important factor in industrial location, exemption from local taxes is not.

Many Southern states have, however, found such tax incentives helpful and justify the resultant discrimination against existing industries because of severely depressed economic conditions. Similar economic conditions do not, of course, exist in Montana. The need for tax exemptions to lure industry is, therefore, less critical here and the action of the Supreme Court is not likely to have a detrimental effect upon our industrial development so long as we maintain and improve our tax system so that all segments of the economy support the costs of government proportionately within their capabilities.

## BRIEFS

Montana's oil production continued its rise in July, according to the State Oil and Gas Conservation Commission, with a daily production of 61,673 barrels. Also, 63 new wells were drilled during the month, of which thirty struck oil, one was a gas well, and 32 were dry holes. Montana now has 35 per cent of its area either leased or productive (Wyoming is 42 per cent leased, North Dakota 74 per cent, and Oklahoma 45 per cent), according to Independent Petroleum Association of America. Northern Pacific Railway Company, which owns much of the lease land in the Williston Basin, reports that its 1956 gross revenue from oil has nearly doubled over 1955 figures. Refinery activity maintained its high level too, with a total of over two million barrels of Montana, Canadian, and Wyoming oil refined in the state's ten refineries. Phillips Petroleum announced plans to build a catalytic cracking unit at their Great Falls refinery, to cost a million dollars and to be ready by next summer.

## Lignite - -

(Continued from Page 1)

the boiler is too large for spreader-stoker equipment. The boiler, or steam generator, will be capable initially of converting 51,260 gallons of water from the Yellowstone River per hour into steam at a pressure of 1,250 pounds per square inch and at a temperature of 950° F. This steam will be delivered to a 44,000-kilowatt turbine driving a 3,600 rpm generator which will be cooled by hydrogen gas under pressure.

After processing to remove the lignite flyash or dust, flue gases from the boiler will be discharged from a 200-foot stack. Natural gas will be available for emergency and standby use. A completely automatic combustion control system will regulate boiler ratings in accordance with power demands.

The generator will deliver electric current to the transformers, located adjacent to the turbine room, which will step up the voltage from 13,800 to 115,000 volts for transmission over company lines, or over lines leased from the U. S. Bureau of Reclamation.

All station processes, with the exception of coal-handling and ash removal, will be controlled from a centralized room located on the turbine operating deck. Closed-circuit television cameras to observe furnace and water boiler levels will be used. There is sufficient space at the plant site to store 100,000 tons of fuel.

Construction schedules call for trial operation of the completed plant in August, 1958. At that time, thirty men will be directly employed. Eventually, the process is expected to be sufficiently efficient to develop a kilowatt-hour of electric energy for each two pounds of lignite fuel consumed. And predicted performance figures indicate the station will have a capability in excess of 50,000 kilowatts, more than half the present installed capacity of Fork Peck Dam.

While further research is needed to perfect industrial processes using lignite, this plant is a start. With low-cost power, abundant water, accessible minerals, and a growing urban population, this part of Montana should be in for further growth and advancement.

A little-known fact is that Montana's industrial workers are among the best paid in the country. Data compiled by the U. S. Department of Labor and published in "Mountain States Employment—June 1956" shows that Montana industrial employees earned an average weekly wage of \$90.04 in June, compared with a national average of \$79.40. This fact should be considered an inducement to new economic activity in our state.

As reported in the June-July issue of INDUSTRIAL HORIZONS, Foreman, Ford and Company of Minneapolis plans to manufacture paint in the former Milwaukee railroad depot in Great Falls. Further information received from George W. Harper, Vice-President, reveals that the most modern plant available will be installed, and that between 1,500 and 2,000 gallons of paint per day will be manufactured. Montana raw materials will be used, including vegetable oils, lead and zinc pigments, and oil-refinery solvents.

## MONTANA STATE PLANNING BOARD

Sam Mitchell Building

Helena, Montana

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Published monthly and distributed free of charge. Names will be placed on the mailing list upon request.

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